MIT

BATES LINEAR ACCELERATOR CENTER

Operated by the Massachusetts Institute of Technology for the United States Department of Energy

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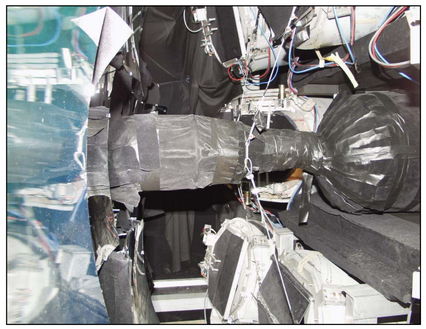
MOST RECENT EXPERIMENTS

OOPS

- Shape and polarizability of the Proton
- Structure of Deuteron

University of Athens, Greece
Arizona State University
California State University, Los Angeles
Mainz University, Germany
MIT
University of Massachusetts, Amherst
University of New Hampshire
St. Mary's University, Halifax, Canada
Tohoku University, Japan



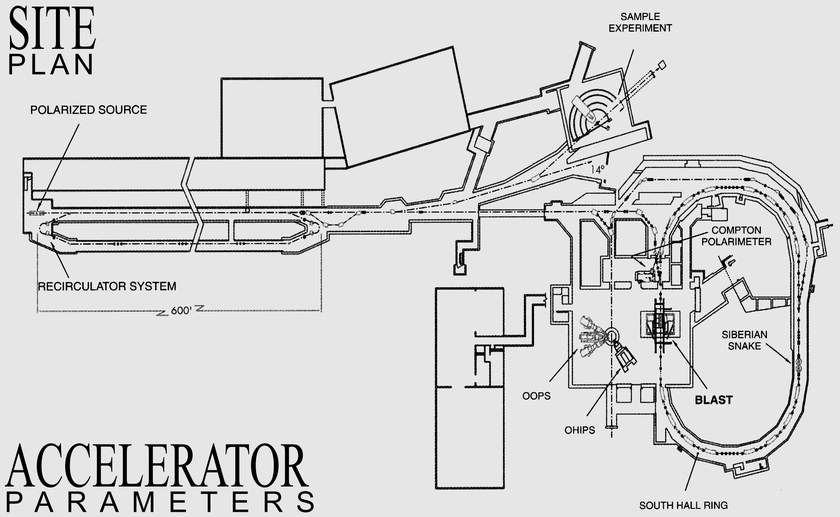
SAMPLE

Strange Magnetism and the Anapole structure of the Proton

CALTECH
University of Illinois
University of Maryland
ISN-Grenoble
MIT
Virginia Tech
University of Kentucky
Louisiana Tech
College of William and Mary

- The MIT-Bates Linear Accelerator Center is located in Middleton, Massachusetts, approximately 20 miles north of Boston.
- It is a national user facility where over 200 nuclear physicists from around the world study the structure of atomic nuclei using medium energy electron beams.
- Young scientists are educated and trained in nuclear physics.
- Important contributions to society result from having a frontier laboratory sited at a major research university.
- Bates employs a staff of approximately 85 physicists, engineers and technicians.
- Over three decades, Bates has developed frontier research equipment for nuclear physicists.
- Electron and photon beams are routinely used for instrument calibration by scientists from MIT and elsewhere.

SITE PLAN



ACCELERATOR PARAMETERS

Linac and Recirculator

• Length	180 m
• Energy range	0.1 - 1.1 GeV
• Peak current	0.1 - 40 mA
• Average current	50 μA
• Beam pulse duration	1.3 - 24 μs
• Pulse repetition rate	600 Hz
• Duty factor	1 %
• Energy spread (with Energy Compresion System)	0.03 %
• RF frequency	2.856 GHz

South Hall Ring

• Energy range	0.3 - 1.1 GeV
• Circumference	190.205 m
• Bend radius	9.144 m
• Revolution frequency	1.576 MHz
• RF frequency	2.856 GHz
• Stored beam:	
Current	~150 mA
Lifetime	~15 min
• Extracted beam:	
Current	10 mA

CURRENT EXPERIMENT BLAST

- Precise determination of nucleon form - factors
- Structure of light nuclei
- Nuclear Astrophysics

Arizona State University
Boston University
Dartmouth University
ETH, Zurich, Switzerland
Free University, Amsterdam, The Netherlands
MIT
University of New Hampshire
Ohio University
University of Wisconsin, Madison
U.S. Naval Academy